UNITED STATES PATENT AND TRADEMARK OFFICE

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EXAMINER
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

PTOL-90A (Rev. 04/07)

	Application No.	Applicant(s)
Office Action Summary	10/614,313	PEKONEN, HARRI
	Examiner	Art Unit	
	Chuck Huynh	2617	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on <u>25 October 2007</u>.
2a) ☐ This action is **FINAL**.   2b) ☒ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) *1-24* is/are pending in the application.
    4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) *1-24* is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.
10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
    a) ☐ All b) ☐ Some * c) ☐ None of:
      1. ☐ Certified copies of the priority documents have been received.
      2. ☐ Certified copies of the priority documents have been received in Application No. _____.
      3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1.   The Art Unit location of your application in the USPTO has changed. To aid in

correlating any papers for this application, all further correspondence regarding this

application should be directed to Art Unit 2617.

Continued Examination Under 37 CFR 1.114

1.   A request for continued examination under 37 CFR 1.114, including the fee set

forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this

application is eligible for continued examination under 37 CFR 1.114, and the fee set

forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action

has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on

10/25/2007 has been entered.

Response to Arguments

Applicant's arguments with respect to claims 1-24 have been considered but are

moot in view of the new ground(s) of rejection.

Regarding claim 1-24, Applicant argues that "Nothing in either Periyalwar or

Demetrescu discloses, teaches or suggests "*correcting the error in accordance with a*

first forward error correcting (FEC) code by replacing a complete packet" in response to

detecting an error resulting from handover. In fact, nothing in either reference discloses

errors occurring within a burst of data, forward error correcting codes, or correcting

errors generally. Examiner has addressed all the stated issues on the grounds of the rejection.

Furthermore, it is officially noted that communication in burst of data packets is well known in the art (in Patent 7085254; Yun et al; Col 1, lines 31-35). Burst errors are also well-known in the art (in Patent 6370666; Lou et al. provided by Applicant; Col 3, lines 61-65).

Examiner would like to ask Applicant for clarification of claim 1, limitation (e). The use of FEC codes to replace a complete packet could not be found in the specification. However, to expedite the examination process claim 1 has been rejected as claimed.

Claim Rejections - 35 USC § 103

1.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2.   **Claims 1, 5, 7, 8, 12, 13, and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Periyalwar et al. (US 6018662; hereinafter Periyalwar) in view of Luby et al. ("The Use of Forward Error Correction (FEC) in Reliable Multicast"; hereinafter Luby).**

Regarding claims 1, 2, Periyalwar discloses the method comprising:

(a) receiving at a wireless terminal a first burst of data packets from the first base

station, wherein the first burst corresponds to the first service (in communication with

the first base station for providing wireless communication service: Col 4, lines 58-60;

Col 8, lines 60-62; servicing a call Col 8, lines 21-23);

(b) performing a handover from the first base station to the second base station

(performing handover procedures: Col 5, lines 4-9);

(c) receiving second burst of data packets from the second base station, wherein

the second burst corresponds with the first service (establishing a communication link

with the second base station for wireless communication service: Col 5, lines12-21;

servicing a call: Col 8, lines 21-23).

Even though Periyalwar in view of Luby does not distinctively disclose that the

communication between the wireless terminal and the base stations to be bursts of

packets and that errors can accord in bursts; it is officially noted that this is well known

in the art.

Periyalwar discloses all the particulars of the claim but is unclear on

(d) detecting whether there is an error within the second burst; and

(e) correcting the error in accordance with a first forward error correcting (FEC)

code by replacing a complete packet, wherein the error result from handover .

However, with Periyalwar's disclosure of the use of FEC in soft handoff (Col 5, lines 39-

41) in combination of Luby's disclosure (Page 4 of 17, last paragraph, stating that, if

some packets are lost in transit between the sender and the receiver (in this case: "the

error within the second burst"), the use of FEC codes within packets can be used to

reassemble the packet) which reads on both limitations of

(d) detecting whether there is an error within the second burst; and

(e) correcting the error in accordance with a first forward error correcting (FEC).

It would have been obvious to one ordinarily skilled in the art at the time of invention to

incorporate Luby's disclosure with Periyalwar's FEC disclosure to provide reliable data

transport.

Regarding claim 2, Luby discloses the method of claim 1, wherein (e) comprises:

(i)determining whether a first data packet is missing from the second burst of

data packets; and (ii) calculating the first data packet from the second burst of data

packets in accordance with the first FEC code (Page 4 of 17, last paragraph).

Regarding claim 3, Luby discloses the method of claim 1, wherein (e) comprises:

(i) determining whether a received symbol is incorrect, wherein the received

symbol is contained in one of the data packets of the second burst; and (ii) correcting

the received symbol, wherein the received symbol is equal to a corresponding

transmitted symbol (Page 3 /17).

Regarding claim 5, it is well known that the method of claim 1, wherein (e) is

performed at an application layer (also taught by Zhang et al: FEC is performed at the

Application layer: US 6999432: claim 30).

Regarding claim 7, Periyalwar discloses the method of claim 1, wherein the first

FEC code comprises a block forward error correcting (FEC) code (Col 5, lines 39-41).

Regarding claim 8, Luby discloses the method of claim 1, wherein the first FEC

code comprises an expandable forward error correcting code (Page 10/17 section 2.4).

Regarding claim 12, Periyalwar discloses the method of claim 1, wherein (b)

comprises:

(i) measuring a first signal characteristic of a first signal that is transmitted by the

first base station (Col 5, lines 58-67);

(ii) measuring a second characteristic of a second signal that is transmitted by

the second base station (Col 5, lines 58-67); and

(iii) if the first signal characteristic satisfies a first predefined criterion and if the

second signal characteristic satisfies a second predefined criterion, switching reception

from the first base station to the second base station (Col 5, lines 58-67).

Regarding claim 13, Periyalwar discloses disclose the method of claim 1,

wherein the first base station is associated with a first center frequency value and the

second base station is associated with a second center frequency value (base stations

have specific frequencies: Col 6, lines 30-35).

Regarding claim 16 and 17, it is well known in the art that in a cellular network

instructions are in a computer-readable medium having computer-executable

instructions such as instructions for performing the steps recited in claim 1.

3.   **Claims 4 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable**

over Periyalwar in view of Luby in further view of McAlear (US 6697372).

Regarding claim 4, Periyalwar in view of Luby discloses all the particulars of the

claim except for the method of claim 3, wherein (e) further comprises:

(iii) if numbering of received data packets is not consecutive in the second

burst, rearranging the received data packets so that the numbering is consecutive; and

(iv) if duplicate data packets are received within the second burst, discarding one of the

duplicate data packets.

However, McAlear does disclose the limitations of (iii) if numbering of received

data packets is not consecutive in the second burst, rearranging the received data

packets so that the numbering is consecutive; and (iv) if duplicate data packets are

received within the second burst, discarding one of the duplicate data packets (delete

duplication to correct sequential order of packets: Col 39, lines 53-57).

It would have been obvious to one ordinarily skilled in the art at the time of

invention to combine McAlear's disclosure to provide more ways to correct packet

errors.

Regarding claim 6, Luby discloses the method of claim 2, wherein (i) comprises:

(1) determining packet numbers that are associated with received packets of

the second burst, wherein the packet numbers correspond to a transmitted packet

ordering (checking packet headers for order is well known in the art);

(2) determining whether if a packet number is missing from the received data

packets (Page 4/17); and

Periyalwar in view of Luby discloses all the particulars of the claim including an

FEC erasure encoder (Page 4/14) but is unclear on

(3) inserting a null symbol to signify an erasure within the second burst,

wherein the null symbol is associated with a missing data packet.

However, McAlear does disclose (3) inserting a null symbol to signify an erasure

within the second burst, wherein the null symbol is associated with a missing data

packet (Col 35, lines 7-12).

It would have been obvious to one ordinarily skilled in the art at the time of

invention to combine McAlear's disclosure to provide more FEC functionality for error

correcting.

4.   Claim15 is rejected under 35 U.S.C. 103(a) as being unpatentable over

Periyalwar in view of Luby in further view of Schuster et al. (US 6226769;

hereinafter Schuster).

Regarding claim 15, Periyalwar in view of Schuster the method of claim 1, wherein the first service is an Internet Protocol (IP) service (TCP/IP protocol: Col 1, lines 39-45).

It would have been obvious to one ordinarily skilled in the art at the time of invention to provide FEC for TCP/IP transmission protocol for a more reliable transport of information.

1.   **Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Periyalwar in view of Luby in further view of Campanella (US 5864546).**

Regarding claim 9, even though Periyalwar discloses the use of FEC coding, which can render the limitation of receiving configuration about the first FEC code obvious; however Campanella does distinctively discloses the method of claim 1, further comprising:

(e) receiving configuration information about the first FEC code (Col 7, lines 6-13).

It would have been obvious to one ordinarily skilled in the art at the time of invention to incorporate Campanella's disclosure to define the specificity of FEC.

2.   **Claims 10 and 14 rejected under 35 U.S.C. 103(a) as being unpatentable over Periyalwar in view of Luby in further view of Wager et al. (US 6691273; hereinafter Wager).**

Regarding claim 10, Periyalwar in view of Luby discloses all the particulars of the claim but is unclear about the method of claim 9, wherein the configuration information is able to be received over an overhead channel from one of a plurality of base stations that are associated with the wireless system.

However Wager does disclose the method of claim 9, wherein the configuration information is able to be received over an overhead channel from one of a plurality of base stations that are associated with the wireless system (Col 1, lines 35-44).

It would have been obvious to one ordinarily skilled in the art at the time of invention to incorporate Wager's disclosure to provide transmission of configuration from base station to wireless system.

Regarding claim 14, Periyalwar in view of Luby discloses all the particulars of the claim but is unclear about the first base station is associated with a first channelization code and the second base station is associated with a second channelization code.

However, Wager does disclose the method of claim 1, wherein the first base station is associated with a first channelization code and the second base station is associated with a second channelization code (Col 2, lines 35-45; Fig. 1).

It would have been obvious to one ordinarily skilled in the art at the time of invention to incorporate Wager's disclosure to provide distinctions between communicating base stations.

3.   **Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over**

Periyalwar in view of Luby in further view of Chou (6594798 B1).

Regarding claim 11, Periyalwar discloses all the particulars of the claim including

the method of claim 1, further comprising:

(f) performing a handover from the first base station to the second base station Col

5, lines 58-67);

however, Periyalwar in view of Luby does not fully disclose

(e) receiving a third burst of data packets from the first base station, wherein the

third burst corresponds to a second service;

(g) receiving a fourth burst of data packets from the second base station, wherein

the second burst corresponds to the second service; and

(h) if another error is detected within the fourth burst, correcting the other error by

utilizing a second FEC code.

However, Chou does disclose

(e) receiving a third burst of data packets from the first base station, wherein the

third burst corresponds to a second service (Col 17, lines 48-51);

it would have been obvious to one ordinarily skilled in the art at the time of

invention to incorporate Chou's disclosure in the process of handover to provide error-

free communication transmission; and

(g) receiving a fourth burst of data packets from the second base station, wherein

the second burst corresponds to the second service (Col 18, lines 48-51));

it would have been obvious to one ordinarily skilled in the art at the time of

invention to incorporate Chou's disclosure in the process of handover to provide error-

free communication transmission;

4.   **Claims 18 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable**

over Willenegger et al. (US 2003020769; hereinafter Willenegger) in view of

Periyalwar et al. (US 6018662; hereinafter Periyalwar) in view of Luby et al. ("The

Use of Forward Error Correction (FEC) in Reliable Multicast"; hereinafter Luby).

Regarding claim 18, Willenegger discloses a wireless terminal that receives data

from a wireless system, the wireless system comprising a first base station and a

second base station (Page 2, [0023], [0024], [0025]), comprising:

a storage buffer (Fig. 2, no. 262; Page 10, [0181]);

a timing module (Page 3, [0035]);

a radio module that communicates with the wireless system over a radio channel

(Fig. 2, no. 250);

a processor that receives an indication from the timing module that one of a

plurality of bursts of data packets is being transmitted and that stores said one of

plurality of bursts into the storage buffer, the processor configured to perform (Fig. 2,

no. 256; Page 2, [0029]):

However, to further clarify the limitations of

(a) receive a first burst of data packets from a first base station, wherein the first

burst correspond to an associated service;

(b) perform a handover from the first base station to the second base station;

(c) receive a second burst of data packets from the second base station, wherein the second burst corresponds to the associated service;

(d) detect whether there is an error within the second burst; and

(e) correct the error in accordance with a first forward error correcting (FEC) code by replacing a complete packet, wherein the error result from handover .

Periyalwar is used in combination to disclose

(a) receive a first burst of data packets from the first base station, wherein the first burst corresponds to the first service (in communication with the first base station for providing wireless communication service: Col 4, lines 58-60; Col 8, lines 60-62; servicing a call Col 8, lines 21-23);

(b) perform a handover from the first base station to the second base station (performing handover procedures: Col 5, lines 4-9);

(c) receive second burst of data packets from the second base station, wherein the second burst corresponds with the first service (establishing a communication link with the second base station for wireless communication service: Col 5, lines12-21; servicing a call: Col 8, lines 21-23).

Even though Periyalwar in view of Luby does not distinctively disclose that the communication between the wireless terminal and the base stations to be bursts of packets and that errors can accord in bursts; it is officially noted that this is well known in the art.

Periyalwar discloses all the particulars of the claim but is unclear on

(d) detect whether there is an error within the second burst; and

(e) correct the error in accordance with a first forward error correcting (FEC) code

by replacing a complete packet, wherein the error result from handover .

However, with Periyalwar's disclosure of the use of FEC in soft handoff (Col 5, lines 39-

41) in combination of Luby's disclosure (Page 4 of 17, last paragraph, stating that, if

some packets are lost in transit between the sender and the receiver (in this case: "the

error within the second burst"), the use of FEC codes within packets can be used to

reassemble the packet) which reads on both limitations of

(d) detect whether there is an error within the second burst; and

(e) correct the error in accordance with a first forward error correcting (FEC).

It would have been obvious to one ordinarily skilled in the art at the time of invention to

incorporate Luby's disclosure with Periyalwar's FEC disclosure to provide reliable data

transport.

It would have been obvious to one ordinarily skilled in the art at the time of

invention to combine Periyalwar's and Luby's disclosure to further provide reliable

transmission using FEC.

Regarding claim 19, Luby discloses the apparatus of claim 18, wherein the

processor is further configured to:

(i)determine whether a first data packet is missing from the second burst of data

packets; and (ii) calculate the first data packet from the second burst of data packets in

accordance with the first FEC code (Page 4 of 17, last paragraph).

5.   Claim 20-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Willenegger in view of Luby.

Regarding claim 20, Willenegger discloses an apparatus (Col 2, [0023], [0024],

[0025]), comprising:

a storage buffer (Fig. 2, no. 232; Page 9, [0162]);

a network interface (Page 18, [0281]); and

a processor (Fig. 2, no. 214), the processor configured to perform:

> (a) obtaining the information from an information source, the information
>
> being associated with a service (Page 18, [0274 – 0280]);
>
> (b) forming a plurality of data packets from the information and storing the
>
> plurality of data packets into the storage buffer (Page 9, [0162];
>
> Page 18, [0274]);
>
> (e) retrieving the plurality of data packets from the storage buffer (Page 9,
>
> [0162] and sending the plurality of data packets to the wireless
>
> terminal through the network interface (Page 2, [0027]).

Willenegger discloses all the particulars of the claim and even error correcting

coding within a handover (Page 8, Section [0155]; Page 14, Section [0225]) but does

not fully disclose

(c) determine a variable forward error correcting (FEC) code that provides

a desired degree of robustness corresponding to the service and a possible loss

of data packets when the wireless terminal handovers from the first base station

to the second base station, wherein the first base station and the second base

station transmit bursts of data packets;

(d) encode the plurality of data packets in accordance with the forward

error correcting (FEC) code; and

However, since Willenegger discloses soft handoff (Page 2, [0024], [0025]) Luby

in combination does disclose the limitations to

(c) determine a variable forward error correcting (FEC) code that provides

a desired degree of robustness corresponding to the service and a possible loss

of data packets (Page 3/17: 4th paragraph: FEC encoder...encoding can vary on

per packet basis) when the wireless terminal handovers from the first base

station to the second base station, wherein the first base station and the second

base station transmit bursts of data packets; and

(d) encoding the plurality of data packets in accordance with the forward

error correcting (FEC) code (Page 3/17).

It would have been obvious to one ordinarily skilled in the art at the time of invention to apply the FEC codes to provide a more reliable transport of data.

Regarding claim 21, Luby discloses the service source of claim.20, wherein (c) comprises:

(i) receiving at least one parameter about the FEC code (Page 3/17).

Regarding claim 22, Willenegger discloses soft handoff (Page 2, [0024], [0025]) Luby in combination discloses the service source of claim 20, wherein the FEC code is determined in accordance with a potential loss of data packets when a wireless terminal performs a handover (types of FEC: Page 4, 3rd paragraph).

Regarding claim 23, Luby discloses the service source of claim 20, wherein the FEC code is selected in accordance with the service (depending on whether it involves large amount of data: type of FEC: Page 4, 3rd paragraph).

6. Claim 24 is rejected under 35 U.S.C. 102(b) as being anticipated by Strawczynski et al. (US6381232) in view of Luby in further view of McAlear.

Regarding claim 24, Strawczynski discloses a method (Abstract; Col 1, lines 37-51) comprising:

(a) receiving a first burst of data packets from the first base station, wherein the

first burst corresponds to the associated service (Col 5, lines 37-45);

(b) performing a handover from the first base station to the second base station;

(c) receiving a second burst of data packets from the second base station (Col 5,

lines 37-45), wherein the second burst corresponds to the associated service;

(d) determining packet numbers that are associated with received packets of the

second burst, wherein the packet numbers correspond to a transmitted packet ordering

(Col 1, lines 57-60; Col 2, lines 6-8; Col 3, lines 23, 33-35; Col 14, line 19 – 64; Col 15,

lines 48 – Col 16, line 49; Col 17, lines 14 – 40; Col 6, lines 47-65; checking packet

header for order is known in the art);

Strawczynski discloses all the particulars of the claim but to further clarify the

limitations of

(e) determining whether a packet number is missing from the received data

packet;

(f) inserting a null symbol to signify an erasure within the second burst, wherein

the null symbol is associated with a missing data packet; and

(g) calculating the missing data packet from the second burst of data packets in

accordance with a forward error correcting.

Strawczynski discloses the handoff and Luby in combination discloses

(e) determining whether a packet number is missing from the received data

packet; and (g) calculating the missing data packet from the second burst of data

packets in accordance with a forward error correcting (a missing/lost packet: Page 17,

last paragraph, stating that, if some packets are lost in transit between the sender and the receiver (in this case: "the error within the second burst"), the use of FEC codes within packets can be used to reassemble the packet.

It would have been obvious to one ordinarily skilled in the art at the time of invention to incorporate Luby's disclosure with Strawczynski's FEC disclosure to provide reliable data transport.

Strawczynski in view of Luby does disclose all the limitation including an FEC erasure encoder (Page 4/14) but is unclear on

(f) inserting a null symbol to signify an erasure within the second burst, wherein the null symbol is associated with a missing data packet.

However, McAlear does disclose (3) inserting a null symbol to signify an erasure within the second burst, wherein the null symbol is associated with a missing data packet (Col 35, lines 7-12).

It would have been obvious to one ordinarily skilled in the art at the time of invention to combine McAlear's disclosure to provide more FEC functionality for error correcting.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chuck Huynh whose telephone number is 571-272-7866. The examiner can normally be reached on M-F 8am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Duc Nguyen can be reached on 571-272-7503. The fax phone number for

the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the

Patent Application Information Retrieval (PAIR) system. Status information for

published applications may be obtained from either Private PAIR or Public PAIR.

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For more information about the PAIR system, see http://pair-direct.uspto.gov. Should

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system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Chuck Huynh

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